

Appl. No. 10/528,963
Amdt. dated February 26, 2008
Reply to Office action of November 26, 2007

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 (Currently amended). An image encoding system comprising:
- (a) providing an a first image;
 - (b) quantizing a discrete cosine transform of said ~~first~~ image using a first set of quantization values;
 - (c) quantizing said discrete cosine transform of said ~~first~~ image using a second set of quantization values different from said first set of quantization values, and where neither said first set of quantization values nor said second set of quantization values are calculated using data from said image;
 - (d) comparing said ~~first~~ image to a spatial reconstructed image based upon said first set of quantization values using a visual difference model that simulates the perception of the human eye;
 - (e) comparing said first image to a spatial reconstructed image based upon said second set of quantization values using said visual difference model;
 - (f) selecting one of said first set of quantization values and said second set of quantization values based upon respective said comparing.

- 2 (Currently amended). The method of claim 1 including the step of selectively scaling the selected one of said first set of quantization values and said second set of quantization values if a comparison of said image to said spatial reconstructed image produces an error metric

between an upper threshold and a lower threshold wherein said discrete cosine transform results in a matrix of values.

3 (Original). The method of claim 1 wherein said first set of quantization values is based upon, at least in part, the color primaries of a display.

4 (Original). The method of claim 1 wherein said first set of quantization values is based upon, at least in part, the modulation transfer function of a display.

5 (Original). The method of claim 1 wherein said first set of quantization values is based upon, at least in part, a tone scale of a display.

6 (Original). The method of claim 1 wherein said first set of quantization values is based upon, at least in part, the resolution of a display.

7 (Original). The method of claim 1 wherein said first set of quantization values is based upon, at least in part, a particular viewing distance for viewing the display.

8 (Original). The method of claim 1 wherein said comparing is based upon, at least in part, a contrast sensitivity function of the human visual system.

9 (Original). The method of claim 1 wherein said first set of quantization values is based upon, at least in part, a color gamut of a display.

10 (Original). The method of claim 1 wherein said comparing is based upon, at least in part, a contrast sensitivity difference model.

11 (Original). The method of claim 10 wherein said model collapses to CIELAB for large patches of color.

12 (Currently amended). The method of claim 1 wherein said spatial reconstructed image based upon said first set of quantization values and said spatial reconstructed image based upon said second set of quantization values are each reconstructed from respective digital structures having substantially the same compression ratio in relation to each other when respectively compared to said image first set of quantization values is based upon, at least in part, viewing conditions and image structure dependent.

13 (Original). The method of claim 1 wherein said first set of quantization values is based upon, at least in part, a luminance response of a display.

14 (Original). The method of claim 1 wherein said selecting is based upon an error measure.

15 (Original). The method of claim 1 further comprising determining a first error measure based upon said comparing of said first set and a second error measure based upon said comparing of said second set.

16 (Original). The method of claim 15 wherein said selecting is based upon said first and second error measures.

17 (Original). The method of claim 16 further comprising modifying said selected set of quantization values based upon said error measure.

18 (Original). The method of claim 17 further comprising modifying said image based upon said modified selected set of quantization values.

19 (Original). The method of claim 18 wherein said modified image is encoded.

20 (Currently amended). An image encoding system comprising:

- (a) providing a first image;
- (b) quantizing a discrete cosine transform of said first image using a first set of quantization values;
- (c) comparing said first image to a spatial reconstructed image based upon said first set of quantization values using a model to determine an error measure;
- (d) based upon said error measure, modifying scaling said first set of quantization values by applying a single common scaling factor to each quantization value within said first set of quantization values, said scaling factor having a value not dependent on information from said first image; and
- (e) quantizing said discrete cosine transform of said first image using said modified first set of quantization values.

21 (Original). The method of claim 20 wherein a scaling factor is selectively increased based upon said error measure.

22 (Original). The method of claim 21 wherein said scaling factor is selectively decreased based upon said error measure.

23 (Original). The method of claim 21 wherein said error measure is selectively increased provided said error measure is less than a threshold.

24 (Original). The method of claim 22 wherein said error measure is selectively decreased provided said error measure is greater than a threshold.

25 (Currently amended). An image encoding system comprising:

- (a) providing a first image;
- (b) quantizing a discrete cosine transform of said first image using a first set of quantization values;
- (c) quantizing said discrete cosine transform of said first image using a second set of quantization values different from said first set of quantization values, and where neither said first set of quantization values nor said second set of quantization values are calculated using data from said image;
- (d) comparing said first image to a spatial reconstructed image based upon said first set of quantization values using a model to determine an error measure;

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- (e) comparing said first image to a spatial reconstructed image based upon said second set of quantization values using said model to determine an error measure;
- (f) selecting one of said first set of quantization values and said second set of quantization values based upon respective said error measures;
- (g) based upon said error measure scaling the selected said one said modifying a respective set of quantization values;
- (h) quantizing said discrete cosine transform of said first image using said modified set of quantization values.